425 **Blood meal source influences starter pig performance.** L. J. Kats, J. L. Nelssen*, R. D. Goodband, M. D. Tokach and T. L. Weeden. Kansas State University, Manhattan.

A total of 72 weanling pigs (initially 5.3 kg and 21 d of age) was used in a 28-d growth trial to determine the influence of blood meal source on starter pig performance. Pigs were blocked by weight into four replications of six pigs/pen. The three blood sources tested were flash-dried bovine, spray-dried bovine and spray-dried porcine. All diets contained 10% dried whey and were calculated to 1.25% lysine, .31% methionine, .9% calcium and .8% phosphorus. All diets were formulated to contain 2.5% of each blood meal source. Calculated amino acid concentrations for flash-dried bovine, spray-dried porcine and spray-dried bovine were: lysine 7.25, 9.37, 11.0; methionine .80, 1.0, 1.41; isoleucine .88, .76, .92; tryptophan 1.10, 1.62, .97; and threonine 4.07, 4.27, 4.49, respectively. Analyzed amino acid concentrations were: lysine 8.01, 7.53, 7.66; methionine .72, .88, 1.05; isoleucine 1.04, .91, .77; tryptophan .75, 1.67, 1.61; and threonine 3.13, 3.62, 3.96, respectively. Pigs consuming the diets containing the spray-dried blood meals had improved ADG and G/F compared to pigs fed the diet containing flash-dried blood meal during d 0-14 (P<.01) and the overall period (P<.05). The response was magnified during the first two weeks postweaning with differences decreasing as the trial progressed. There were no differences (P>.19) between spray-dried bovine and spray-dried porcine blood meal during the 28-d trial. When using blood meal as a protein source for the early weaned pig, it is imperative that the blood meal is a high quality, spray-dried product.

Item		Flash-dried bovine	Spray-dried bovine	Spray-dried Porcine	CV, %
d 0-14	ADG, g[a]	102	169	157	12.1
	ADFI, g[a]	210	251	254	4.7
	G/F[a]	.49	.67	.61	8.2
d 0-28	ADG, g[a]	245	323	294	8.5
	ADFI, g	424	477	456	8.1
	G/F[a]	.58	.68	.64	4.7
Pig wt d 28, kg[a]		12.1	14.3	13.6	4.5

[a] Contrast spray-dried vs flash-dried (P<.01).

Key Words: Spray-dried blood meal, Flash-dried blood meal, Starter diet.

427 **Effect of heat stress and energy intake from days 3 to 30 postmating on embryo survival.** Chung-Wen Liao* and T. L. Veum, University of Missouri, Columbia.

A total of 72 bred gilts were used in three trials, 24 gilts per trial, to study the effects of heat stress and energy intake on embryo survival. Gilts were moved into the environmental chambers on d 3 postmating and allotted to treatment. Four treatments were made by combining two dietary energy levels (5400 and 8100 kcal ME intake daily per gilt) with two environmental temperatures in a 2 X 2 factorial arrangement. Diets were formulated to equalize daily nutrient intake for each gilt except for ME. Intake was 1.60 kg/d for gilts fed 5400 kcal ME/d. The 8100 kcal ME diet was made by adding .35 kg lard to the 5400 kcal ME diet. Temperature in the hot chamber was gradually increased from 25°C at 0800 to 34°C at 1400 and kept at 34°C until 1600. Then temperature was gradually lowered from 34° to 25°C at 2000, and kept at 25°C until 0800. Thermoneutral chamber temperature was kept constant at 23°C. Diets were fed once a day at 0800. Water was supplied ad libitum. At d 30±2 postmating, the gilts were slaughtered. Reproductive tracts were collected and backfat thickness was measured. Number of corpora lutea and live embryos, and embryo length and weight were determined. Trials were pooled and the data were analyzed by ANOVA with a factorial arrangement of the treatments. There was no interaction (P>.05) between dietary energy and temperature for any criteria measured. Gilts housed in the hot chamber had fewer (P<.05) embryos than gilts housed in the thermoneutral chamber. Gilts fed the high energy diet had a larger number of live embryos (P<.06) which resulted in a higher percentage of embryos (P<.02) that survived to d 30. Gilts fed the high energy diet had a greater (P<.001) backfat thickness and daily gain than gilts fed the low energy diet. In conclusion, the detrimental effects of heat stress on embryo survival in early gestation were confirmed. However, a high energy diet may increase embryo survival.

Key Words: Gilts, Heat Stress, Embryo Survival

426 **Effect of barley cultivar and enzyme supplementation on performance of growing-finishing pigs.** D.N. Peters, J.A. Froseth, D.C. Honeyfield, M.S. Han and M.C. Mill. Washington State University, Pullman.

Two experiments were conducted to determine the feeding value of s barley cultivars with or without enzyme supplementation on performan of growing-finishing pigs. In experiment 1, 120 pigs (37-97 kg) we assigned to 10 treatments arranged as a 5 x 2 factorial in 6 randomiz complete blocks (pens) with 2 pigs per pen. Five barley cultiva (Advance, Karl, Lud, Steptoe and 9044) were fed with or without 0.1 Irgazyme 100, a crude pectinase mixture from Ciba-Geigy Corporatio There was no barley x enzyme interaction in any of the data, no enzy effect on performance during the grower phase and no differences ADFI throughout the trial. Average daily gain of growing and finishi pigs fed Lud (.82 kg) was greater (P<.05) than those fed Karl (.73 k but similar to Advance, Steptoe and 9044 (.79, .78 and .77 k respectively). Feed to gain ratio (F/G) of pigs fed Lud (3.12) was bet (P<.05) than pigs fed Karl (3.48) or 9044 (3.42) but not different fro pigs fed Advance (3.19) or Steptoe (3.28). Enzyme addition improv ADG (P<.05) from .77 to .82 kg and decreased F/G (P<.05) from 3.(to 3.52 during the finishing phase (61-97 kg). In experiment 2, 360 p (21-104 kg) were allotted to 6 treatments in a 2 x 3 factorial arrangeme with 12 replicates of 5 pigs per pen randomly blocked in time. Gallat and Steptoe barleys were fed with no enzyme, 0.05% ß-glucanase 0.1% Porzyme SF 100, a mixed enzyme product containing ß-glucanas cellulase, xylanase and pectinase activities, manufactured by Finnfee International. There were no differences in ADG or ADFI throughо experiment 2. Growing pigs (21-50 kg) fed Gallatin had better (P<.0 F/G (2.42) than those fed Steptoe (2.51) and there was a similar tre during the finishing phase. There was a barley x enzyme interaction f F/G during the finisher phase (50-104 kg). Addition of ß-glucanase to t diets decreased F/G of pigs fed Gallatin from 3.53 to 3.33 while there w no effect of ß-glucanase on F/G of pigs fed Steptoe. Likewise, additi of Porzyme SF 100 decreased F/G of pigs fed Gallatin from 3.53 to 3.3 but the effect on pigs fed Steptoe was only very slight, a decrease fro 3.42 to 3.38. In conclusion, enzyme supplementation of barley di improved efficiency of feed conversion in both experiments, primari during the finishing phase of growth, but this effect may be related barley cultivar.

Key Words: Barley variety, Swine, Enzyme supplementation

428 **Feeding level during gestation affects glucos tolerance, and exogenous insulin increases fee intake in lactating sows.** W. C. Weldon*, A. J Lewis, G. F. Louis, J. L. Kovar, and P. S. Miller University of Nebraska, Lincoln.

Sixty crossbred primiparous sows were randoml assigned in a 2 x 2 factorial arrangement c treatments. During gestation, sows received either standard level of feed (1.85 kg/d; SL) or were allowe to eat ad libitum (AL), and received an injection c either .75 IU insulin/kg BW or an equal volume c saline daily from d 1 to 7 of lactation. Sows wer subjected to a glucose tolerance test (1 g glucose/k BW i.v.) on d 1 of lactation prior to insuli treatment and to an epinephrine challenge (.4 µg/kg B i.v.) on d 3. All sows were allowed to eat ad libitu during lactation. Exogenous insulin increased (P .07) ADFI through d 7 of lactation and increased (P 09) cumulative feed intake on d 7 and 14 of lactatior Cumulative feed intake on d 21 of lactation wa greater in SL than in AL sows but was not affected b insulin treatment. After glucose infusion, pea glucose concentration was not different betwee treatments, but AL sows had an increased (P < .01 latency for glucose to return to baselir concentration. Peak concentration of insulin afte glucose infusion was not different (P > .4) but th area under the curve formed by insulin concentratic was greater (P < .05) in AL sows. Epinephrir infusion resulted in baseline and peak concentration of plasma nonesterified fatty acids (NEFA) that wer higher in AL sows and were not affected by insuli treatment. Area under the curve formed by NEF concentration was greater in AL sows, was decreased b insulin injection in SL sows, but was increased b insulin injection in AL sows (P = .07). The dat indicate that overfeeding during gestation may reduc feed intake during lactation by causing insuli resistance in AL sows.

Key Words: Sows, Feed Intake, Insulin